

Step-by-Step Solutions with Pro

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FROM THE MAKERS OF WOLFRAM LANGUAGE AND MATHEMATICA

WolframAlpha

gamma(gamma(2))



Assuming "gamma" is a math function

Input

$\Gamma(\Gamma(2))$

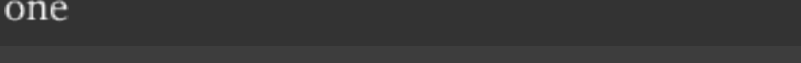


Result

1



Number line



Number name

one



Visual representation



Alternative representations

$$\Gamma(\Gamma(2)) = \frac{G(1 + \Gamma(2))}{G(\Gamma(2))}$$



$$\Gamma(\Gamma(2)) = e^{-\log G(\Gamma(2)) + \log G(1 + \Gamma(2))}$$



$$\Gamma(\Gamma(2)) = (-1 + \Gamma(2))!$$



$$\Gamma(\Gamma(2)) = \Gamma(\Gamma(2), 0)$$



$$\Gamma(\Gamma(2)) = (1)_{-1 + \Gamma(2)}$$



$$\Gamma(\Gamma(2)) = e^{\log \Gamma(\Gamma(2))}$$



$$\Gamma(\Gamma(2)) = (-2 + 2 \Gamma(2))!! 2^{1/4 (3 + \cos(2 \pi \Gamma(2)) - 4 \Gamma(2))} \pi^{1/2 \sin^2(\pi \Gamma(2))}$$



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Series representations

$$\Gamma(\Gamma(2)) = \sum_{k=0}^{\infty} \frac{(\Gamma(2) - z_0)^k \Gamma^{(k)}(z_0)}{k!} \text{ for } (z_0 \notin \mathbb{Z} \text{ or } z_0 > 0)$$



$$\Gamma(\Gamma(2)) \propto e^{-\Gamma(2)} \exp\left(\sum_{k=0}^{\infty} \frac{B_{2+2k} \Gamma(2)^{-1-2k}}{2+6k+4k^2}\right) \Gamma(2)^{-1/2+\Gamma(2)} \sqrt{2\pi} \text{ for } \infty \rightarrow 1$$



$$\Gamma(\Gamma(2)) \propto \frac{e^{-\Gamma(2)} \Gamma(2)^{-1/2+\Gamma(2)} \sqrt{2\pi}}{\exp\left(-\sum_{k=0}^{\infty} \frac{B_{2+2k} \Gamma(2)^{-1-2k}}{2+6k+4k^2}\right)} \text{ for } \infty \rightarrow 1$$



$$\Gamma(\Gamma(2)) \propto e^{-\Gamma(2)} \Gamma(2)^{-1/2+\Gamma(2)} \sqrt{2\pi} + e^{-\Gamma(2)} \Gamma(2)^{-1/2+\Gamma(2)} \sqrt{2\pi} \sum_{k=1}^{\infty} \sum_{j=1}^{2k} \frac{(-1)^j 2^{-j+k} \Gamma(2)^{-k} \mathcal{D}_{2(j+k),j}}{(j+k)!}$$

for $((\infty \rightarrow 1 \text{ and } \mathcal{D}_{n,j} = (-1+n) ((-2+n) \mathcal{D}_{-3+n,-1+j} + \mathcal{D}_{-1+n,j}) \text{ and } \mathcal{D}_{0,0} = 1 \text{ and } \mathcal{D}_{n,1} = (-1+n)! \text{ and } \mathcal{D}_{n,j} = 0) \text{ for } n \leq -1 + 3j)$



$$\Gamma(\Gamma(2)) = \frac{\pi}{\sum_{k=0}^{\infty} (\Gamma(2) - z_0)^k \sum_{j=0}^k \frac{(-1)^j \pi^{-j+k} \sin\left(\frac{1}{2} \pi (-j+k+2z_0)\right) \Gamma^{(j)}(1-z_0)}{j! (-j+k)!}}$$



$$\Gamma(\Gamma(2)) \propto 2^{-\lceil (\pi + \arg(\Gamma(2))) / (2\pi) \rceil} e^{-\Gamma(2)} \csc^{\lceil (\pi + \arg(\Gamma(2))) / (2\pi) \rceil} (\pi \Gamma(2)) \exp\left(\sum_{k=0}^{\infty} \frac{B_{2+2k} \Gamma(2)^{-1-2k}}{2+6k+4k^2}\right)$$

$$\left(\exp\left(i\pi \left[\frac{\pi + \arg(\Gamma(2))}{2\pi}\right]\right) \Gamma(2)\right)^{-1/2+\Gamma(2)} \sqrt{2\pi} \text{ for } \infty \rightarrow 1$$



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Integral representations

$$\Gamma(\Gamma(2)) = \int_0^{\infty} e^{-t} t^{-1+\Gamma(2)} dt$$



$$\Gamma(\Gamma(2)) = \int_0^1 \log^{-1+\Gamma(2)}\left(\frac{1}{t}\right) dt$$



$$\Gamma(\Gamma(2)) = \exp\left(\int_0^1 \frac{-1 + x^{\Gamma(2)} + \Gamma(2) - x \Gamma(2)}{(-1+x) \log(x)} dx\right)$$



$$\Gamma(\Gamma(2)) = \exp\left(-\gamma \Gamma(2) + \int_0^1 \frac{1 - x^{\Gamma(2)} + \log(x^{\Gamma(2)})}{\log(x) - x \log(x)} dx\right)$$



$$\Gamma(\Gamma(2)) = \int_1^{\infty} e^{-t} t^{-1+\Gamma(2)} dt + \sum_{k=0}^{\infty} \frac{(-1)^k}{k! (k + \Gamma(2))}$$



$$\Gamma(\Gamma(2)) = \frac{2i\pi}{\oint e^t t^{-\Gamma(2)} dt}$$



$$\Gamma(\Gamma(2)) = \oint_L e^{-t} t^{-1+\Gamma(2)} dt$$



$$\Gamma(\Gamma(2)) = \frac{2\pi}{i \oint e^{-t} (-t)^{-\Gamma(2)} dt}$$



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Related Queries:

use Simpson's rule x! from 1 to 3 with 3 intervals



poles of Gamma(z)



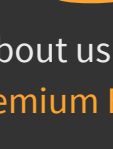
word frequency history for the word factorial



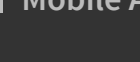
some products containing Gamma(k)



gamma(x) duplication formula



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